

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

1-52. (CANCELED)

53. (CURRENTLY AMENDED) An isolated or purified nucleic acid, wherein the nucleic acid comprises:

(A) retroviral nucleic acid sequences consisting of:

- (1) ψ packaging sequences;
- (2) cis-acting nucleic acid sequences for reverse transcription;
- (3) cis-acting nucleic acid sequences for virus integration;
- (4) at least one cPPT sequence, at least one CTS sequence, and the intervening *pol* sequences; and
- (5) optionally a cis-acting sequence RRE,

wherein any other sequence of *pol* is absent;

and

(B) at least one heterologous nucleic acid sequence of interest, wherein the retroviral nucleic acid sequences in (A) induce import of the heterologous nucleic acid sequence of interest into a cell nucleus.

54. (PREVIOUSLY PRESENTED) A vector comprising the nucleic acid as claimed in claim 53.

55. (PREVIOUSLY PRESENTED) The vector of claim 54, which is an expression vector, a shuttle vector, an integration vector, a transposon, or a retrotransposon.

56. (CURRENTLY AMENDED) A vector that is pTRIP ΔU3 EF1αGFP deposited at National Collection of Cultures of Microorganisms, Accession Number I-2328.

57. (PREVIOUSLY PRESENTED) A recombinant cell comprising the vector of claim 56.

58. (PREVIOUSLY PRESENTED) A recombinant cell comprising the vector of claim 54.

59. (PREVIOUSLY PRESENTED) A recombinant virus comprising the nucleic acid of claim 53.

60. (PREVIOUSLY PRESENTED) The recombinant virus of claim 59, which is a retrovirus.

61. (PREVIOUSLY PRESENTED) The recombinant retrovirus of claim 60, which is a lentivirus.

62. (PREVIOUSLY PRESENTED) A recombinant cell comprising the nucleic acid as claimed in claim 53.

63. (CURRENTLY AMENDED) The recombinant cell of claim 62, wherein the cell is a HeLa cell or a hematopoietic [[stem]] cell.

64. (PREVIOUSLY PRESENTED) The recombinant cell of claim 62, wherein the cell is a hematopoietic stem cell.

65. (CURRENTLY AMENDED) A process for inserting a heterologous nucleic acid sequence of interest into a nucleus of a target cell, *in vitro*, wherein the process comprises exposing an isolated or purified nucleic acid to a target cell under conditions that permit uptake of the isolated or purified nucleic acid into the target cell, wherein the isolated or purified nucleic acid comprises:

(A) retroviral nucleic acid sequences consisting of:

- (1) ψ packaging sequences;
- (2) cis-acting nucleic acid sequences for reverse transcription;
- (3) cis-acting nucleic acid sequences for virus integration;
- (4) optionally a cis-acting sequence RRE; and
- (5) at least one cPPT sequence, at least one CTS sequence, and the intervening pol sequences,

wherein any other sequence of pol is absent;

and,

(B) at least one heterologous nucleic acid sequence of interest,

wherein the retroviral nucleic acid sequences in (A) induce import of the heterologous nucleic acid sequence of interest into the cell nucleus.

66. (PREVIOUSLY PRESENTED) The process as claimed in claim 65, wherein the efficiency of insertion of the nucleic acid of interest into the target cell nucleus is 30% or greater.

67. (PREVIOUSLY PRESENTED) The process as claimed in claim 65, wherein the nucleic acid of interest is in a vector.

68. (PREVIOUSLY PRESENTED) The process as claimed in claim 65, wherein the heterologous nucleic acid encodes a peptide, polypeptide, or protein.

69. (PREVIOUSLY PRESENTED) The process as claimed in claim 65, wherein the target cell is a non-dividing cell.

70. (PREVIOUSLY PRESENTED) The process as claimed in claim 65, wherein the target cell is a HeLa cell or a hematopoietic cell.

71. (CURRENTLY AMENDED) A process for expressing a heterologous nucleic acid sequence of interest, *in vitro*, wherein the process comprises:

(A) exposing a target cell to an isolated or purified nucleic acid under conditions that permit uptake of the isolated or purified nucleic acid into the target cell to create a recombinant cell, wherein the isolated or purified nucleic acid comprises:

- (1) retroviral nucleic acid sequences consisting of:
 - (a) ψ packaging sequences;
 - (b) cis-acting nucleic acid sequences for reverse transcription;
 - (c) cis-acting nucleic acid sequences for virus integration;
 - (d) optionally a cis-acting sequence RRE; and
 - (e) at least one cPPT sequence, at least one CTS sequence, and the intervening *pol* sequences,

wherein any other sequence of *pol* is absent;

and

(2) at least one heterologous nucleic acid sequence of interest,
wherein the nucleic acid sequences in (A) induce import of the heterologous
nucleic sequence of interest into a cell nucleus,
and

(B) culturing the recombinant cell under conditions that permit at least part of
the nucleic acid to be transferred to the nucleus of the recombinant cell and the
heterologous nucleic acid of interest to be expressed.

72. (PREVIOUSLY PRESENTED) The process as claimed in claim 71,
wherein the nucleic acid is in a vector.

73. (PREVIOUSLY PRESENTED) The process as claimed in claim 71,
wherein the gene of interest is expressed in tissue culture.

74. (PREVIOUSLY PRESENTED) The process as claimed in claim 71, which
further comprises purifying or isolating the product of expression of the gene of interest.

75. (CURRENTLY AMENDED) A nucleic acid comprising the *Cla* insert [[or]]
~~and the *Eco*RI/*Bam*HI insert, or both the *Cla* and *Eco*RI/*Bam*HI inserts~~ of vector
pTRIPΔU3EF1αGFP deposited at National Collection of Cultures of Microorganisms,
Accession Number I-2328.

76. (CURRENTLY AMENDED) An isolated or purified nucleic acid
comprising:

(A) retroviral nucleic acid sequences comprising:
1. ψ packaging sequences;
2. cis-acting nucleic acid sequences for reverse transcription;

3. cis-acting nucleic acid sequences for virus integration;
4. optionally a cis-acting sequence RRE; and
5. at least one cPPT sequence, at least one CTS sequence, and the intervening *pol* sequences,

wherein any other sequence of *pol* is absent;

and

(B) at least one heterologous nucleic acid sequence,

wherein the retroviral nucleic acid sequences in (A) induce import of the heterologous nucleic sequence into a cell nucleus.

77. (PREVIOUSLY PRESENTED) A vector comprising the nucleic acid as claimed in claim 76.

78. (CURRENTLY AMENDED) A process for inserting a heterologous nucleic acid sequence of interest into the nucleus of a target cell, *in vitro*, said ~~method process~~ comprising exposing an isolated or purified nucleic acid to a target cell under conditions that permit uptake of said nucleic acid into the target cell, wherein said isolated or purified nucleic acid comprises:

(A) retroviral nucleic acid sequences comprising:

- (1) ψ packaging sequences;
- (2) cis-acting nucleic acid sequences for reverse transcription;
- (3) cis-acting nucleic acid sequences for virus integration;
- (4) at least one cPPT sequence, at least one CTS sequence, and the intervening *pol* sequences; and

(5) optionally a cis-acting sequence RRE,₁

wherein any other sequence of pol is absent;

and

(B) at least one heterologous nucleic acid sequence;

wherein the retroviral nucleic acid sequences in (A) induce import of the heterologous nucleic sequence into a cell nucleus.

79. (CURRENTLY AMENDED) A process for expressing a heterologous nucleic acid sequence of interest *in vitro* comprising:

(A) exposing target cells to an isolated or purified nucleic acid under conditions that permit uptake of said nucleic acid into the target cell to create a recombinant cell, wherein said isolated or purified nucleic acid comprises:

(1) retroviral nucleic acid sequences comprising:

- (a) ψ packaging sequences;
- (b) cis-acting nucleic acid sequences for reverse transcription;
- (c) cis-acting nucleic acid sequences for virus integration;
- (d) at least one cPPT sequence, at least one CTS sequence, and the intervening pol sequences; and
- (e) optionally a cis-acting sequence RRE,₁

wherein any other sequence of pol is absent;

and

(2) at least one heterologous nucleic acid sequence of interest,

wherein the retroviral nucleic acid sequences in (A) induce import of the heterologous nucleic acid sequence into a cell nucleus;

and

(B) culturing the recombinant cell under conditions that permit at least part of the nucleic acid to be transferred to the nucleus of the recombinant cell and the heterologous nucleic acid of interest to be expressed.

80. (NEW) The process as claimed in claim 65, wherein the target cell is a hematopoietic stem cell.